Claims

1. Method for determining a connection path (VP) and a wavelength channel (wk1 to wkn) that is unoccupied on the optical transmission links (OS1 to OS9) of this connection path (VP) for setting up a connection via at least a first and second network node (A, F) within a transparent optical transmission system (ASTN) with a plurality of further network nodes (A to F) connected together via optical transmission links (OS1 to OS9),
- with which a link weighting ($d_{i,r}$) that is a function of the optical transmission link (OS1 to OS9) and the wavelength channel (wk1 to wkn) in question is determined for the wavelength channels (wk1 to wkn) of an optical transmission link (OS1 to OS9),
- with which a connection cost value is generated for every connection path (VP1, VP2, VP3) available for connection set-up and the associated wavelength channel (wk1 to wkn) by evaluating the at least one link weighting ($d_{i,r}$),
- with which the connection path (VP2) having the minimum connection cost value is selected with the associated wavelength channel (wk2) for setting up the connection.

2. Method according to claim 1, characterized in that a network-wide channel weighting ($e_i$) is assigned to each wavelength channel (wk1 to wkn).

3. Method according to claim 2, characterized in that the network-wide channel weighting ($e_i$) is determined with the aid of a channel weighting function (f(i)).

4. Method according to claim 1, characterized in that the transparent optical transmission system (ASTN) is split into a number of virtual optical transmission sub-systems (Sub1 to Subn) each having just one optical wavelength channel (wk1 to wkn) with the determined link weightings ($d_{i,r}$) being assigned to the transmission links (OS1 to OS9) available in the transmission sub-networks (Sub1 to Subn) and the transmission sub-networks (Sub1 to Subn) being evaluated to determine the connection path (VP2) having the minimum connection cost value and the associated wavelength channel (wk2).

5. Method according to one of claims 3 to 4, characterized in that the link weighting ($d_{i,r}$) for each transmission link (OS1 to OS9) and wavelength channel (wk1 to wkn) is determined according to the following formula:

$$d_{i,r} = f(i) * d_r$$

where

i = number of wavelength channel

r = number of transmission link

f(i) = channel weighting function

$d_r$ = position parameter.

6. Method according to claim 3, characterized in that the channel weighting function (f(i)) is implemented as a linear function that is dependent on the respective wavelength channel (wk1 to wkn).

7. Method according to claim 3, characterized in that the channel weighting function (f(i)) is implemented as a linear function that is dependent on the respective wavelength channel (wk1 to wkn) with the form

$$f(i) = a + b*i$$

where

i = number of wavelength channel

a = a first parameter

b = a second parameter.

8. Method according to claim 3, characterized in that the occupancy status of the wavelength channels (wk1 to wkn) on the transmission links (OS1 to OS9) already occupied by further connections is evaluated by means of the channel weighting function (f(i)), with the current degree of usage of each optical wavelength channel (wk1 to wkn) within the transparent optical transmission system (ASTN) being determined or estimated to this end.

9. Method according to claim 8, characterized in that the channel weighting function (f(i)) is implemented as a function that is dependent on the degree of usage of the respective wavelength channel (wk1 to wkn) with the form:

$$f(i) = g(A_{i,occupied}/A_{i,overall})$$

where

i = number of wavelength channel

$A_{i,occupied}$ = number of transmission links on which the wavelength channel i is occupied

$A_{i,overall}$ = number of all transmission links on which the wavelength channel i is physically available

g(...) = any function.

10. Method according to claim 5,
characterized in that
when determining the position parameter ($d_r$) derived from the respective optical transmission link (OS1 to OS9) the length of the transmission link (OS1 to OS9) or the delay caused by the transmission link (OS1 to OS9) or further technically or economically relevant parameters of the optical transmission link (OS1 to OS9) are taken into account.

11. Method according to one of claims 1 to 10,
characterized in that
to generate the connection cost value, the individual link weightings ($d_{i,r}$) of the transmission links for the associated wavelength channel (wk1 to wkn), which are part of the connection path (VP1 to VP3) in question are added together.

Claims

1. Method for determining a connection path (VP) and a wavelength channel (wk1 to wkn) that is unoccupied on the optical transmission links (OS1 to OS9) of this connection path (VP) for setting up a connection via at least a first and second network node (A, F) within a transparent optical transmission system (ASTN) with a plurality of further network nodes (A to F) connected together via optical transmission links (OS1 to OS9),

- with which a connection cost value is generated for every connection path (VP1, VP2, VP3) available for connection set-up and the associated wavelength channel (wk1 to wkn) and
- with which the connection path (VP2) having the minimum connection cost value is selected with the associated wavelength channel (wk2) for setting up the connection,

characterized in that

- a link weighting ($d_{i,r}$) that is a function of the characteristics of the optical transmission link (OS1 to OS9) and the wavelength channel (wk1 to wkn) in question respectively is determined for every wavelength channel (wk1 to wkn) of an optical transmission link (OS1 to OS9) and
- the connection cost value is generated by evaluating the at least one link weighting ($d_{i,r}$).